SUMMARY

PROJECT BACKGROUND

Contaminated marine sediments in urban areas of Puget Sound, including Bellingham Bay, can pose a threat to both marine life and public health. Cleanup of contaminated sediments has proven to be a difficult task, complicated by high costs, limited disposal site options, concerns about environmental liability, source control issues, habitat alterations, and regulatory and land owner constraints. To address the need for sediment cleanup and overcome some of the existing roadblocks to expedited actions, the Bellingham Bay Demonstration Pilot (Pilot) was established.

The Pilot brings together a cooperative partnership of agencies and tribes, local government and businesses known collectively as the Pilot Team, to develop an approach for source control, sediment cleanup and associated habitat restoration in Bellingham Bay. As part of the approach, the Pilot Team has developed a Comprehensive Strategy that considers contaminated sediments, sources of pollution, habitat restoration and in-water and shoreline land use from a baywide perspective. The Strategy integrates this information to identify priority issues requiring action in the near-term and to provide long-term guidance to decision-makers.

This final Environmental Impact Statement (final EIS) evaluates the potential environmental impacts of implementing the Bellingham Bay Comprehensive Strategy, under the State Environmental Policy Act (SEPA). The Comprehensive Strategy was identified as the preferred alternative by the Pilot Team following a review and evaluation of comments to the draft EIS that was published in August 1999. The Preferred Alternative also includes a preferred integrated near-term remedial action alternative. The Preferred Alternative is summarized in this section, and described in more detail in Section 2.

COMPREHENSIVE STRATEGY DEVELOPMENT

The Pilot Team first crafted a Mission Statement for the project as well as a number of objectives – environmental, process, partnering, and policy – to ensure achievement of the overall Mission Statement. The Mission Statement is:

"To use a new cooperative approach to expedite source control, sediment cleanup and associated habitat restoration in Bellingham Bay."

Based upon this initial work, four fundamental project elements were defined – sediment cleanup and source control, sediment disposal siting, habitat, and land use. This was followed by the creation of seven baywide pilot goals that reflect the collective interests of the Pilot Team and the desired outcome of the project.

The Pilot Team compiled, collected and analyzed information for each project element separately and applied the baywide goals to identify priorities. The information and priorities for sediment cleanup and source control, sediment disposal siting, habitat and land use were then combined to create the Comprehensive Strategy.

Baywide Pilot Goals

Goal 1 - Human Health and Safety
Implement actions that will enhance the protection of human health

Goal 2 - Ecological Health
Implement actions that will protect and improve the ecological health of the bay

Goal 3 - Protect and Restore Ecosystems
Implement actions that will protect, restore, or enhance habitat components making up the bay's ecosystem

Goal 4 - Social and Cultural Uses
Implement actions that are consistent with or enhance cultural and social uses in the bay and surrounding vicinity

Goal 5 - Resource Management
Maximize material re-use in implementing sediment cleanup actions, minimize the use of non-renewable resources, and take advantage of existing infrastructure where possible instead of creating new infrastructure

Goal 6 - Faster, Better, Cheaper
Implement actions that are more expedient and more cost-effective, through approaches that achieve multiple objectives

Goal 7 - Economic Vitality
Implement actions that enhance water-dependent uses of commercial shoreline property

Components of the Comprehensive Strategy

The Comprehensive Strategy is comprised of a number of different components:

General Baywide Recommendations: The Comprehensive Strategy includes a number of baywide recommendations for achieving the seven goals of the Pilot. These general recommendations are listed according to the main project elements.

Subarea Strategies: A separate strategy for each of nine geographic subareas was developed that provides greater detail on priorities and recommended actions for land use, habitat, sediment sites, cleanup, disposal, and source control.

Preliminary Draft Habitat Mitigation Framework: A Preliminary Draft Habitat Mitigation Framework was developed by the Pilot Team in order to define the type and extent of mitigation that may be required from implementing sediment remedial actions or other actions in the Comprehensive Strategy. This strategy is a work in progress and has not been applied. Rather, at the discretion of regulatory agencies, it may be used in the future during remedial action permitting or for other actions.

Integrated Near-Term Remedial Action Alternatives: A range of alternatives was developed that focus on cleanup and source control measures at high priority sites in the bay while integrating habitat and land use considerations and opportunities.

The final EIS is both a programmatic and a project specific EIS. The programmatic component evaluates impacts from implementation of the general Bay wide recommendations and subarea strategies. The project specific component evaluates impacts from implementation of the Integrated Near-Term Remedial Action Alternatives and is intended to satisfy the SEPA requirements of the Whatcom Waterway, Cornwall Avenue Landfill, and Harris Avenue Shipyard sites.

General Baywide Recommendations

The Bellingham Bay Comprehensive Strategy includes a list of recommendations organized by the four project elements – sediment sites and source control, sediment disposal siting, habitat, and land use. The recommendations address general issues and then make specific suggestions for actions. For instance, the Land Use element includes the recommendation that human

impacts, such as commerce and navigation, be focused in the federal waterways and state harbor areas and away from the Nooksack Delta, and other highly productive areas.

Subarea Strategies

As part of the Bellingham Bay Comprehensive Strategy, the Pilot Team developed individual strategies for nine geographic subareas of the bay. Beginning on the west side of the Bay, and moving east, these subareas are:

1) West Bay
2) Squalicum Industrial
3) Squalicum Harbor
4) Central Waterfront
5) Whatcom Industrial
6) South Hill
7) Fairhaven
8) South Bay
9) Marine (open water in bay)

Each subarea strategy includes a description of the 'Primary Use' associated with the subarea, as well as recommended guidelines for 'Land Use', 'Habitat', and 'Sediment Sites, Cleanup, Disposal, and Source Control'.

Preliminary Draft Habitat Mitigation Framework

The implementation of sediment remedial actions can change aquatic habitat. Some of the changes could be beneficial while others could be potentially harmful. A Preliminary Draft Habitat Mitigation Framework (Appendix C) was developed by the Pilot Team to provide an ecosystem context for mitigation actions within Bellingham Bay that may be required as a result of implementing remedial actions or future projects in the Bay. The Preliminary Draft Mitigation Framework, which is still a work in progress, can be used at the discretion of relevant regulatory agencies.

Integrated Near-Term Remedial Action Alternatives

In the draft EIS, five alternatives were developed to address priority sediment cleanup and source control sites in the Bay, and to integrate habitat restoration and land use considerations with the cleanup. Based on public comment, a Preferred Integrated Near-Term Remedial Action Alternative (Preferred Remedial Action Alternative) was identified.

The alternatives are:

Alternative 2A, Removal and Capping to Achieve Authorized Channel Depths (Confined Aquatic Disposal): Alternative 2A would achieve sediment quality standards (SQS) criteria at priority sediment cleanup sites within Bellingham Bay. This alternative would maintain existing navigation channels, and minimize dredging (310,000 cubic yards) and disposal of contaminated sediment. Subtidal aquatic habitat would be converted to intertidal aquatic habitat through the use of caps and confined aquatic disposal (CAD). The emphasis of this alternative is minimal disturbance in the near-term, potentially precluding future options to achieve deeper than currently authorized navigation depths.

Alternative 2B, Removal and Capping to Achieve Authorized Channel Depths (Upland Disposal): As in Alternative 2A, Alternative 2B would achieve SQS criteria at priority sediment cleanup sites within Bellingham Bay. This alternative would maintain existing navigation channels and minimize dredging (310,000 cubic yards) and disposal of contaminated sediment. However, unlike Alternative 2A, dredged materials would be

disposed of at one or more off-site upland landfills. The emphasis of this alternative is the same as Alternative 2A.

Alternative 2C, Full Removal from Navigation Areas (Confined Aquatic Disposal): Alternative 2C would achieve SQS at priority sediment cleanup sites within Bellingham Bay. By removing more material than Alternatives 2A or 2B, this alternative would allow for future deepening of the existing navigation channels without the risk of exposing or excavating contaminated sediments, while converting subtidal aquatic habitat to intertidal aquatic habitat by using caps and CAD facilities. This includes dredging of 820,000 cubic yards. The emphasis of Alternative 2C is on removal of contaminated sediments to provide maximum flexibility to meet future navigational needs (deeper than currently authorized).

Alternative 2D, Full Removal from Navigation Areas and Partial Removal from the G-P ASB and Starr Rock Areas (Upland Disposal): Alternative 2D would achieve SQS criteria at priority sediment cleanup sites in Bellingham Bay. Like Alternative 2C, removing more material from the navigation channels allows flexibility for future deepening without the risk of exposing or excavating contaminated sediments. However, unlike Alternative 2C, dredged materials would be disposed of at one or more off-site upland landfills. This alternative includes dredging of 1,100,000 cubic yards. The overall emphasis of Alternative 2D is on removal of contaminated sediments to provide maximum flexibility to meet future navigational needs (deeper than currently authorized); and removal of areas with elevated mercury concentrations from state-owned aquatic lands.

Alternative 2E, Full Removal from Public Lands (Upland Disposal): Alternative 2E would achieve SQS at priority sediment cleanup sites in Bellingham Bay by removing all contaminated sediment that is located on state-owned lands (2,400,000 cubic yards). This alternative calls for disposal of these materials at one or more off-site upland landfills. This alternative would also allow for maximum flexibility regarding the future deepening of the navigation channels and the use of state-owned harbor areas without the risk of exposing or excavating contaminated sediments. The overall emphasis of Alternative 2E is the removal of contaminated materials from state-owned aquatic lands.

Preferred Remedial Action Alternative, Full Removal from Navigation Areas (Treatment/Confined Aquatic Disposal): The Preferred Remedial Action Alternative would achieve SQS at priority sediment cleanup sites within Bellingham Bay. This alternative removes the same amount of material as Alternative 2C, and allows for future deepening of the existing navigation channels without the risk of exposing or excavating contaminated sediments, while converting subtidal aquatic habitat to intertidal aquatic habitat by using caps and a CAD facility. This includes dredging of 820,000 cubic yards that may be disposed of in a CAD located adjacent to the Cornwall Avenue Landfill. The Preferred Remedial Action Alternative incorporates treatment of contaminated dredged sediments and also acknowledges the potential to beneficially re-use dredged material, if appropriate. The emphasis of the Preferred Remedial Action Alternative is on removal of contaminated sediments to provide maximum flexibility for future navigational needs, while at the same time allowing flexibility in managing the dredged material. The Preferred Remedial Action Alternative best achieves the seven goals of the Pilot (see Page S-2).

The following table summarizes the potential adverse impacts and mitigation measures for the Integrated Near-Term Remedial Action Alternatives and the Preferred Remedial Action Alternative. This table highlights the adverse impacts that are expected from implementation of the alternatives. The impacts described in this summary table are based on the construction of a

Table S.1 Summary of Adverse Impacts and Mitigation for Integrated Near-Term Remedial Action Alternatives

Geology, Water, Sediment & Environmental Health

Impacts Common to all Near-Term Remedial Action Alternatives	Impacts Under Aquatic Disposal Alternatives	Impacts Under Upland Disposal Alternatives	Potential Mitigation Measures
- Dispersion of some contaminants during dredging operations. - Short-term impacts to water quality from dredging contaminated sediment (i.e., increased suspended solids, turbidity and dissolved contaminants, reduced dissolved oxygen).	Alternatives 2A , 2C and Preferred Remedial Action Alternative - Short-term impacts to water quality from placing contaminated sediment in confined aquatic disposal facility and placement of caps (i.e., increased suspended solids, turbidity and dissolved contaminants, reduced dissolved oxygen). - Possible uptake of contaminants by birds as material is transported by barge to disposal site. - Potential leaching of contaminants from disposal facility to surface water.	Alternatives 2B, 2D, and 2E - Potential exposure to construction personnel from volatilization of organics causing inhalation of toxic chemicals and dust. - Possible uptake of contaminants by plants and animals. - Potential leaching of contaminants from landfill to groundwater.	Technology - Mechanically dredge. - Use water quality control measures at the point of dredging or aquatic disposal such as oil booms, silt curtains, or bubble walls. - Use watertight buckets. - Use bottom-dump barge with downpipe or submerged discharge, if warranted. - Use available technology at the disposal facility (i.e., liners, leachate collection system, run-on controls, and treatment technologies). - Use Subtitle D upland landfill or equivalent. - Keep ponded water on top of sediments during barge transport to discourage birds - Place interim caps, if warranted, and construct final cap of effective thickness and stability. - Construct detention basins, sedimentation ponds and runoff controls. - Avoid construction during storms. Operation - Develop contingency plans; conduct monitoring to ensure effectiveness of remediation strategy.

Table S.1 Summary of Adverse Impacts and Mitigation for Integrated Near-Term Remedial Action Alternatives (continued)

Fish & Wildlife

Impacts Common to all Near-Term Remedial Action Alternatives	Impacts Under Aquatic Disposal Alternatives	Impacts Under Upland Disposal Alternatives	Potential Mitigation Measures
Long-Term Impacts - Loss of 0.5 acres of eelgrass habitat (eelgrass impact depends on thickness of cap and extent of eelgrass) - Conversion of intertidal habitat to subtidal, with loss of rearing/foraging habitat for juvenile finfish, Dungeness crab, salmonids, flatfish, hardshell clams and pandalid shrimp: Preferred Alt.: 1 acre converted Alternative 2A: 1 acre converted Alternative 2B: 1 acre converted Alternative 2C: 1 acre converted Alternative 2D: 8 acres converted Alternative 2E: 16 acres converted - Conversion of subtidal habitat to intertidal/shallow subtidal with loss of rearing habitat for juvenile finfish, Dungeness crab, pandalid shrimp: Preferred Alt: 41 acres converted Alternative 2A: 36 acres converted Alternative 2B: 10 acres converted Alternative 2C: 57 acres converted Alternative 2D: 1.5 acres converted Alternative 2E: 2 acres converted	**Disturbed Habitat[1]** Preferred Remedial Action Alternative - 180 acres of subtidal habitat - 38 acres of intertidal/shallow subtidal habitat Alternative 2A - 181 acres of subtidal habitat - 47 acres of intertidal/shallow subtidal habitat Alternative 2C - 206 acres of subtidal habitat - 44 acres of intertidal/shallow subtidal habitat **Temporary, Short-Term Impacts** Preferred Remedial Action Alternative - 38 acres of epibenthic invertebrate habitat - 38 acres of intertidal benthic habitat, and - 180 acres of subtidal benthic habitat Alternative 2A - 47 acres of epibenthic invertebrate habitat - 47 acres of intertidal benthic habitat and 154 acres of subtidal benthic habitat Alternative 2C - 44 acres of epibenthic invertebrate habitat - 44 acres of intertidal benthic habitat and 206 acres of subtidal benthic habitat	**Disturbed Habitat** Alternative 2B - 140 acres of subtidal habitat - 41 acres of intertidal/shallow subtidal habitat Alternative 2D - 163 acres of subtidal habitat - 38 acres of intertidal/shallow subtidal habitat Alternative 2E - 168 acres of subtidal habitat - 38 acres of intertidal/shallow subtidal habitat **Temporary, Short-Term Impacts** Alternative 2B - 41 acres of epibenthic invertebrate habitat - 41 acres of intertidal benthic habitat and 140 acres of subtidal benthic habitat Alternative 2D - 38 acres of epibenthic invertebrate habitat - 38 acres of intertidal benthic habitat and 163 acres of subtidal benthic habitat Alternative 2E - 38 acres of epibenthic invertebrate habitat - 38 acres of intertidal benthic habitat and 161 acres of subtidal benthic habitat **Long-Term Impacts** Alternative 2E Converts 7 acres of upland habitat to subtidal and/or intertidal and shallow subtidal	- Design ASB cap to avoid or minimize impacts on existing eelgrass. - Mitigation measures to be defined through regulatory mechanisms, such as Department of the Army permit, water quality certification and consultation with NMFS. - Habitat Mitigation Framework could be applied at the discretion of relevant regulatory agencies. - Integrate habitat benches into the design of the Cornwall CAD.

[1] Most of this acreage is currently contaminated and, as a result, the disturbed habitat is already impaired.

Table S.1 Summary of Adverse Impacts and Mitigation for Integrated Near-Term Remedial Action Alternatives (continued)

Land Use, Shoreline Use, & Recreation/Public Use

Impacts Common to all Near-Term Remedial Action Alternatives	Impacts Under Aquatic Disposal Alternatives	Impacts Under Upland Disposal Alternatives	Potential Mitigation Measures
- Interference or displacement of tribal, commercial, and recreational fishing and crabbing from created eelgrass habitat at Starr Rock site. - Boat moorage above caps and/or CADs could affect integrity of system.	Preferred Remedial Action Alternative - Log Pond cap would limit future water-dependent uses - Cornwall CAD would limit future water-dependent uses at Cornwall Avenue Landfill - Development of Cornwall CAD site requires use of State owned aquatic lands for contam. seds. Alternative 2A - Any future need to increase navigation depths in federal navigation channels would require disposal of contaminated sediments. - Log Pond CAD would limit future adjacent water-dependent uses. - Starr Rock CAD would limit future water-dependent uses at the south end of Cornwall Avenue Landfill. - Development of Starr Rock CAD site requires use of state-owned aquatic lands for contaminated sediment disposal. Alternative 2C - Log Pond CAD would limit future adjacent water-dependent uses. - Starr Rock CAD would limit future water-dependent uses at the south end of Cornwall Avenue Landfill. - Development of Starr Rock CAD site requires use of state-owned aquatic lands for contaminated sediment disposal.	Alternative 2B - Any future need to increase navigation depths in federal navigation channels would require disposal of contaminated sediments. - Log Pond cap would limit future water-dependent uses. Alternative 2D - Log Pond cap would limit future water-dependent uses. Alternative 2E - Log Pond cap would limit future water-dependent uses.	- Assess need for Regulated Navigation Area (RNA). - Coordinate with tribal fishing activities. - Cap and CAD size and thickness designed to prevent failure of the system, potentially caused by anchor drag from boat moorage.

Table S.1 Summary of Adverse Impacts and Mitigation for Integrated Near-Term Remedial Action Alternatives (continued)

Air & Noise

Impacts Common to all Near-Term Remedial Action Alternatives	Impacts Under Aquatic Disposal Alternatives	Impacts Under Upland Disposal Alternatives	Potential Mitigation Measures
- Sediment cleanup construction activities may have short-term impacts on air quality.	- No additional significant impacts expected.	- Potential for volatilization of contaminants or wind transport of sediments during disposal.	- Testing of dredged material to evaluate potential for volatility and odors to ensure minimized impacts to air quality. - Keep material saturated during transport. - Minimize distance between dredge sites and disposal sites.

Cultural Resources

Impacts Common to all Near-Term Remedial Action Alternatives	Impacts Under Aquatic Disposal Alternatives	Impacts Under Upland Disposal Alternatives	Potential Mitigation Measures
- Majority of activities proposed are within areas of low probability for cultural resources.	Alternative 2A , 2B and Preferred Remedial Action Alternative - Activities proposed are within areas of low probability for cultural resources. - None expected, but dredging near Citizens Dock, a National Register of Historic Places property, may affect the dock's integrity.	Alternative 2C & 2D - Activities proposed are within areas of low probability for cultural resources. - None expected, but dredging near Citizens Dock, a National Register of Historic Places property, may affect the dock's integrity. Alternative 2E - Potential to disturb historic artifacts at Harris Avenue Shipyard and Citizens Dock, a National Register of Historic Places property.	- Coordination with the WA State Office of Archaeology and Historic Preservation (OAHP) to ensure impacts to cultural resources are identified and mitigated. - Develop a Determination of Effect through consultation with the OAHP if activity is proposed near Citizens Dock. - Have professional archaeologist monitor dredging activities in vicinity of Citizens Dock and mudflats. - Field reconnaissance to establish site boundaries of any previously recorded hunter-fisher-gatherer sites that are adjacent to fill deposits. Have professional archaeologist monitor any ground disturbing activities near any previously recorded hunter-fisher-gatherer cultural deposits.

CAD as part of the Preferred Remedial Action Alternative. If treatment is identified as a viable remedy for the contaminated dredged materials in Bellingham Bay, a separate SEPA analysis will be required.

EIS SCOPING

A public scoping period for the environmental impact statement was held in June 1998. At an open house held June 25, 1998, the Pilot Team presented the priorities and a range of near-term project alternatives that would result in cleanup, habitat, and land use actions that would have an immediate positive impact on the Bay's environmental health.

During the scoping period, the Pilot Team received feedback from the public that included responses to the following questions:

- What is your vision for the future environmental health of Bellingham Bay?
- What environmental issues are you most concerned about?
- How can the Pilot approach be improved to more effectively address your concerns?

As might be expected, the majority of comments from the public reflected a desire to have a clean, healthy and productive bay. Citizens were concerned about existing contamination in the bay, controlling future contamination, minimizing environmental impacts during cleanup, and ensuring that cleanup solutions could withstand natural disasters such as earthquakes or tidal waves. Concern was also expressed for protecting and restoring aquatic habitat, both during cleanup activities and after clean up was complete. Some citizens want to see improved public access to the waterfront. And some citizens expressed the need to consider cost/benefit analysis when evaluating cleanup alternatives. The Pilot Team considered these public comments as it assembled the final list of alternatives to be analyzed and elements of the environment to be studied.